REMARKS

In the Decision of the Board of Appeals dated May 25, 2006, the Board rejected Claims 1 and 18 over the patent of Anderson (U.S. Patent No. 6,033,113), but also added a new ground of rejection under 35 USC §112 as failing to disclose the invention in such clear and concise terms to enable one of ordinary skill in the art to make and use the invention. The Board invited Applicant to amend the claims to overcome the new 112 rejection, which is a non-final rejection. Accordingly, Applicant has amended Claims 1 & 18 above, and has the following comments:

As indicated in the first full paragraph on page 6 of the application as filed, the compression molded segment seal 22 of Fig. 1 comprises the profile adherence surface 42 of the first profile surface 26 fused to the portion of the second profile surface 46, which engages the profile adherence surface 42 and a portion of the first 30, second 34 and third 38 ribs of the first profile surface 14 and the corresponding engaged portion of the first 50, second 54 and third ribs 58 of the second profile surface 46. In the embodiment depicted, the compression molded segment seal 22 portion has a thickness less than the combined thickness of the individual first profile 14 and second profile 18.

The formation of the profile assembly 10 and compression molded segment seal 22, as depicted in Figs. 5 and 6, is accomplished by providing a continuous supply of an interconnected first profile 14 and second profile 18 where the ribs 30, 34, 38 of the first profile 14 are engaged with the ribs 50, 54, 58 of the second profile 18.

As seen in FIG. 5, the engaged first profile 14 and second profile 18 are fed or otherwise positioned in proximity to the compression molded segment sealer 62. The compression molded segment sealer 62 provides heat and pressure to the profile assembly to form the compression

molded segment seal 22. In one embodiment of the invention, multiple compression molded segment sealers 62 may be utilized in order to reduce the amount of heat and/or pressure applied at each segment sealer 62.

Figs. 9 and 10 represent graphically the method of forming a fastener profile assembly 70 disclosed herein. As seen in Fig. 9, the following steps are performed in sequence: first 82, an interconnected profile strip 10 is provided; second 84, heat and pressure is applied by the compression molded segment sealer 62 to the interconnected profile strip 10 to form a compression molded segment seal 22; and third 86, the profile strip 10 is advanced 82. The second 84 and third 86 steps are then repeated to form additional completed profile assemblies 70.

During the hearing at the Board of Appeals on the above listed application, the Board indicated that there was insufficient disclosure under 112 to describe compression molding. However, Applicant respectfully submits that one of ordinary skill in the art at the time of the invention would know precisely what the term "compression molding" means, and the appropriate parameters for compression molding. Previously submitted to the Examiner in an Amendment submitted February 10, 2004 was reference to *Modern Plastics Encyclopedia* dated October, 1991. In *Modern Plastics Encyclopedia* on page 271-272, is a complete description of compression molding, attached.

In the preferred embodiment of the present invention, the "mold" is a die and anvil. Heat and pressure applied to the seal material causes the seal material to liquefy. When it liquefies, it flows into voids between the two film layers. The sealed areas are gradually cooled, causing the material in the mold to cool and solidify, taking the shape of the mold. In a preferred

embodiment of the invention, pressure is increased, the cooling time in the mold is increased and the amount of heat is reduced in order to cure the finished product more slowly. In so doing, the segment seal 22 retains its cross section better than it would if the mold were opened quickly or at a relatively higher temperature and gaps between the film layers which would otherwise allow the passage of air across the seal, are eliminated.

As further seen in *Modern Plastics Encyclopedia*, pages 609-618, compression molding machines were widely known as early as 1991. The pressures of 1,000-2,000 psi and 300-400° are described in the *Modern Plastics Encyclopedia*, page 272. In the present case, in order to avoid deformation of the fastener profiles, as claimed, temperature was reduced and pressure was greater than in comparison with conventional heat sealing compounds as described in Anderson, '113. It should be noted in this regard that no specific temperature or pressure is disclosed in Anderson, or in many other patents in this field regarding conventional heat sealing. Thus, Applicant's failure to disclose the specific temperature and pressure does not render it an inadequate disclosure under 35 USC §112, since one of ordinary skill in the art would know to vary the temperature and pressure according to the material utilized, the thickness of material, and the dwell time required given the speed of the machine being utilized. As is known to one of ordinary skill in the art, sealing a plastic material is a combination of three factors: heat, pressure, and dwell time. In the present case, Applicant has increased the pressure and dwell time and decreased the temperature in order to avoid deforming the fastener profile. No other reference teaches utilizing this system for forming reclosable fastener plastic strips or bags utilizing such strips.

The distinction between conventional heat sealing and/or ultra-sonic sealing can further be seen in *Modern Plastics Encyclopedia* since the separate section on ultra-sonic sealing is

found on page 401, and a description of the heaters used for heat sealing is described on pages 365-368. These distinctions would be known to one of ordinary skill in the art, thus the term "compression molded segment seal" and "compression molding" would enable one of ordinary skill in the art to make and use the invention given the original disclosure in the '696 application.

In regard to the patent of Anderson '113, Applicant has amended the claims to include the further limitations that the first and second profile strips are substantially flat but have, in the case of the first profile strip, at least one rib extending therefrom without further filling material or plastic and similarly in the case of the second profile strip. The compression molded segment seal portion is formed by fusing the first profile strip and the second profile strip and the ribs of the first and second profile strips through the application of heat and pressure without further filling material or plastic, unlike Anderson. The fused section is substantially flattened to form an air-tight seal of first and second profile strips, less than the combined thickness of the first and second profile strip, as disclosed in the original application. Claims 1 and 18 have been amended to add "without further filling material or plastic." As pointed out by the Examiner, the patent of Anderson requires use of a fillet, either formed integrally of the fastener strip, or provided as additional material in order to seal the ends of the fastener strips together. Therefore, Applicant respectfully submits that the claims as amended are not anticipated by, and are allowable over, the patent of Anderson and that the term "compression molded" was well-known in the prior art as evidenced by the *Modern Plastics Encyclopedia*. Accordingly, reconsideration and allowance of Claims 1-18 is respectfully requested.

In regard to the addition to claims 1 and 18 of the terms "without further filling material or plastic" proper antecedent basis may be found in the specification as filed, in which the specification describes the first and second profiles as being substantially flat and the drawings,

which form part of the specification, and which only show ribs and not fillets, further filling material or additional plastic. The specification teaches that the use of ribs on fastener profiles with a compression molding sealing of the present invention, create a compression molded sealing segment which is air-tight. Accordingly, entrance of the aforesaid amendments to claims 1 and 18 and allowance of claims is respectfully requested.

Respectfully submitted,

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By: Robert S. Beiser
Robert S. Beiser
Registration No. 28,687

VEDDER, PRICE, KAUFMAN &
KAMMHOLZ, P.C.
222 North LaSalle Street
Chicago, Illinois 60601
(312) 609-7848
Fax: (312) 609-5005

For instance, plasticizers improve impact properties in arduous conditions such as pile driver cushions; oils and solid lubricant fillers reduce the coefficient of friction and improve dimensional stability.

Cast nylon's strength, wear-resistance, resiliency, lubricity, and unlimited size availability have made it the material of choice for many designers and end-users. Custom cast nylon sheaves on mobile boom cranes improve wire rope life and add lifting capacity through weight savings.

The brewing industry uses nylon star wheels because of the toughness of nylon at high speeds and its ability to softly transfer glass bottles without breakage. Because of the nylon's low coefficient of friction, it can be run without lubrication, often saving time-consuming maintenance. Cast nylon bushings, bearings, and gears frequently outwear their metal counterparts and provide sound-dampening advantages. Cast nylon's biggest advantage may be its nearly limitless size availability. Parts can be cast from 1 to 400 lbs., from 2 to 72 in. OD, and from 1 to 10 ft. in length. ∞

by Jack Thorp, President, Cast Nylons Ltd., 30170 Lakeland Blvd., Wickliffe, OH 44092.

Compression and transfer molding

In past years, compression molding was the process used for such thermosetting compounds as urea, phenolic, epoxy, melamines, and rubber. It is still common today, although many of the same materials are also injection molded.

Formulations for transfer molding generally are of a softer plasticity than compression-grade materials. Types of materials are almost limitless within the thermosetting family, with the reservation that high-impact grades of 1.0 ft.-lb. and higher (Izod impact test) will flow only at extreme pressures.

Compression

The most apparent advantage of compression molding of thermosets is the simple system involved. The material is placed in a heated cavity and is pressurized for the required cure time. Tooling costs are inexpensive because of the simplicity. Fillers and reinforcements are random and lead to fair strength properties. Material is not wasted because of the absence of sprues and runners. Mold repair is minimal. Consistency of the part size is good and the absence of gate and flow marks reduce finishing costs. Depending on the part and material, positive, semi-positive, and closed molds are used.

Equipment. Simplicity also is the keynote of the compression molding press. It has two platens that close together, applying heat and pressure to mold material into the wanted shape. Most compression presses are hydraulically operated; some are operated pneumatically. The platens move up and down on four corner posts under pressures that typically can range from 20 to 1000 tons, depending on press size. Platens can range in size from 8 in. square to 5 ft. square.

Various degrees of automation to feed material and eject the part after cure are available in most modern hydraulic presses. Older, simpler systems had temperature, pressure, dwell, and time controls; today's modern equipment has more sophisticated microprocessor controllers.

Heating of the molds can be done for shallow parts by using cartridge or strip heaters in the platen. Deeper parts need electrical cartridge-type heaters or steam or hot-oil systems.

There are several heating systems available for use in compression molding: Steam heating provides uniform mold temperatures, but cannot heat above about 350°F.; cartridge and other electrical types (heater coils, strips, etc.) are clean and easy to maintain, and have become very popular; hot-oil heating offers a very uniform heat because of constant circulation of the heating medium. Newer methods include hot-water systems that, like hot-oil, heat by continuous circulation of a heating medium—here water—and gas flames that can provide very high temperatures to mold exotic materials.

The growing reinforced plastics industry has dictated many changes in the compression molding industry. Molding reinforced plastics involves the use of two matched dies; the male (or plug) and the female (the cavity). When the mold is filled with a reinforced composite the matched heated mold halves are closed while heat and pressure cure the product. The matched dies vary in complexity and are made of aluminum, plastic, or steel. The lightweight materials are less expensive to make but are generally used in short-run production such as "cold molding." Cold molding uses room-temperature-curable resins but still utilizes a mold and a compression molding hydraulic press. Hardened steel molds prove more economical for longer production runs and pro-

vide a better shear for the pinch-off areas and better surface finish. These steel molds for compression molding incorporate machined matched pinch-offs, as opposed to metal-to-metal land areas in conventional molds. The advantages of matched metal die molding are primarily uniformity and good finished surfaces on both sides of the molded part. The closed mold process is used for compression, transfer, and injection molding, and for stampable reinforced composites.

Some thermoplastics can be compression molded but the most common use is with thermosetting resins in pre-combined composites such as BMC (bulk molding compounds), SMC (sheet molding compounds), TMC (thick molding compounds), and mat molding.

Mat molding, sometimes called wet molding composites, combines the reinforcements and the resin at the hydraulic compression press. Often, the mat is placed in the mold and the resins are poured over the reinforcement. The latter is stationary while the resins flow throughout the cavity during the pressing cycle. If the part has severe contours or draw, it is necessary to make a preform. Most mat and preform parts need 150- to 200-p.s.i. molding pressure over the projected area of the part.

Pre-combined composites, such as SMC, are pre-impregnated resin, fillers, catalyst, and reinforcements cut into suitable size sheets or charges to be placed in the hot mold (generally 300 to 400°F.) and then molded at 1000 to 2000 p.s.i. New compression molding equipment for SMC can provide total cycles of less than one minute (button-to-button). Equipment has been developed that can automatically control the platen parallelism with special hydraulic push back cylinders in the compression press.

Matched metal molding results in better finishes, important for appearance parts. Some shrinkage is involved in the process, creating a fiber pattern. In-mold coating operations improve this finish. BMC is one of the oldest of pre-combined molding systems. A combination of fillers (wood flour, minerals, cellulose, etc.) is mixed with the resins in a blade-type mixer. This batch material is then placed in a mold at 300 to 400°F. and molded at 500 p.s.i. Material cost is low because of the inexpensive fillers, but the orientation of the fibers during the molding cycle results in lower mechanical properties.

High-speed compression molding or stamping of reinforced thermoplastic sheets is used in a wide range of applications. A combination of glass mat and PP is combined into a stampable plastic needing less than 40 sec. cycle time. The blanks are conveyed into a convection oven. After heating, the blanks are placed into a compression mold. The new hydraulic presses used in this application close at speeds to 1400 in./min. rapid advance, and press the charge at speeds to 75 in./min. (about 3 times faster than SMC compression molding presses). Several new stampable plastics are on the market, giving good surface finishes with paintable characteristics as well. Molding pressures are generally 1 ton/sq. inch.

The spectrum of traditional compression molding is growing at an ever increasing rate the last few years. Aerospace and defense applications are changing the state of the art to the point where it is difficult to keep up. New developments in SMC, BMC, TMC, thermoplastic sheet stamping, compounding reinforcements, and compression molding machinery are increasing at a rapid rate to meet the new requirements of the industry.

Compression molded advanced composites are being developed primarily for the aerospace and defense industries. New tooling and die concepts, plus high-temperature (to 1200°F.) molding presses, are developing these graphite-carbon-fiber composites to replace existing cast metal component designs. High-temperature silicones are being used as a pressure medium. Sheet layers of the composites are placed into the die for compression molding. Now, the cost of the materials and fabrication make the process more suitable to the aerospace market, but they soon could move into the automotive world as well.

Transfer molding

In the transfer molding process, a charge of thermoset material is placed in a separate chamber, called a pot, then forced out of the pot and into the closed cavity, or cavities, where polymerization (curing) occurs.

Channels, called sprues and runners, direct the flow of material from the pot to the cavities, passing through a restriction, or gate, before entering the cavity. Many cavities can be fed by a single pot. Air in the cavities displaced by the incoming material must be expelled through strategically placed vents. When the material is introduced into the pot, it is usually a measured charge in compacted form, preheated to a temperature near that of polymerization. Only enough material for a single shot is loaded at one time.

The force that moves the charge of preheated material out of the pot is transmitted through a plunger, which is closely fitted to the pot to prevent leakage of material through clearances between the plunger and the sides of the pot. Sealing grooves usually are cut into the plunger to further reduce leakage.

The pot, plunger, sprues, runners, and cavity surfaces are maintained at a temperature suitable for rapid curing of the material, 280 to 380°F., depending on the material characteristics, design of the mold, and geometry of the part. When a transfer mold reaches the end of its cure cycle, the entire shot is ejected, including the gates, runners,